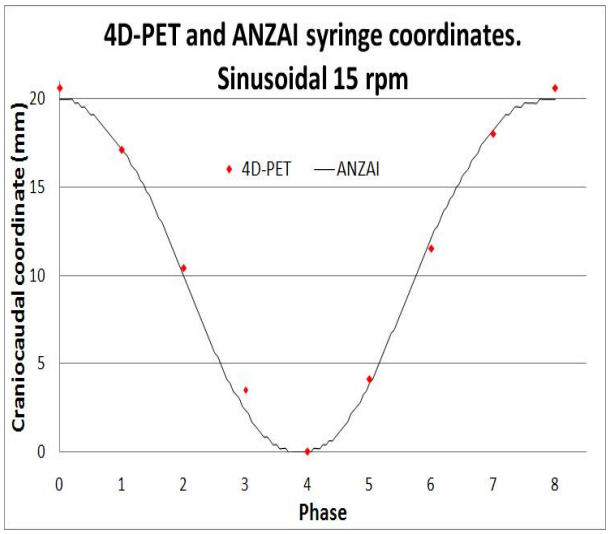

Conclusions: Results exhibited a good synchronization between 4D-PET and the system used to register the respiratory wave, accurate enough to use it for clinical purpose.
For the 4 types of movement, the cranio-caudal displacement between the syringe from the 4D-PET and ANZAI were less than 2.30 mm. Moreover, mean difference showed that in most of the cases, curves were out of phase. This might lead to a systematic error in the tumour position.
It could be interesting to run more measurements for different cycles and 4D-PET acquisitions if we want to modify the margins for the GTV due to the use of 4D-PET for tumor contouring.

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Treatment plan intercomparison for SBRT in a national context: final results from 53 centers

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Purpose/Objective: The purpose of this work is to investigate whether a particular technology can provide superior SBRT treatment plans in a real context, characterized by different radiation technologies (linac and treatment planning systems), and different modality for planning (optimization strategies and team experience).
Materials and Methods: Three inter-comparison studies have been designed for prostate, liver, and lung lesions. Five contoured CT sets, the dose objective to target and a list of constraints for organs at risk, for each anatomical region, were sent to the participants. A total of 53 centers across Italy joint the studies: 14 for liver metastases, 14 for prostate lesions, 25 for lung nodules. Table 1 summarizes the irradiation techniques of each center.

Table 1:

Anatomical region: prostate		Anatomical region: liver		Anatomical region: lung	
Irradiation technique	N.of centers	Irradiation technique	N.of centers	Irradiation technique	N.of centers
VMAT/RapidArc	9	VMAT/RapidArc	8	VMAT/RapidArc	17
IMRT static	4	IMRT static	2	IMRT static	2
CyberKnife	1	CyberKnife	1	Vero	1
		Tomotherapy	1	Tomotherapy	1
		Static 3DCRT	1	Static 3DCRT	1
		Dynamic conf. arc	1	Dynamic 3DCRT	3

Results: For the prostate and lung studies, all participants were able to achieve the objective of dose to target and to respect the constraints on organs at risk. For the liver study, 5 participants did not comply with the constraint to the healthy liver, and 1 center did not achieve the objective of dose to the target in one of the five cases. A large difference between centers emerges in the three studies, due to the differences in the maximum dose and homogeneity accepted; no significant correlation between the irradiation techniques and dose volume histogram was found.
Conclusions: Despite the large difference in the irradiation technique used, the principal goal of a SBRT approach was achieved by all institutions in almost all patients, for both dose coverage to target and dose sparing to organs at risk in all three regions considered. In our analysis, the optimization strategy decided by the planner plays a predominant role respect to the technology utilized. Inter-comparison of DVH could be a useful tool to standardize treatment planning of stereotactic treatments, in particular before starting a clinical multi-institution trial.

PO-0985

How accurate is lung IMRT and VMAT delivery? A multi-centre audit as part of the Isotoxic IMRT trial

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